

Conference Abstract

Ecotaxonomy: Linking traits, taxa, individuals and samples in a flexible virtual research environment for ecological studies

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Abstract

Major research progress in ecology is being achieved through large-scale collaborations across people, groups and countries. In large-scale projects harmonization of data is tedious and time-consuming, but needs to be done reliably and rapidly. This is especially true if projects investigate under-explored organism groups such as tropical invertebrates. To link taxa to their role in ecosystems, functional traits of the taxa need to be considered. However, despite the urgent need for a common database for invertebrate traits, this is yet to be established. We developed an open web platform, Ecotaxonomy (ecotaxonomy.org), that allows traits, taxa, individuals and samples to be linked within research projects. Ecotaxonomy includes a virtual research environment, allowing project members to work jointly online on the data input, integration and retrieval. The taxonomic system of Ecotaxonomy is based on the Global Biodiversity Information Facility (gbif.org), but may be complemented by morphospecies, pictures, literature and other parameters. Any parameters can be customized inside the system and attached either to taxa, individuals, or environmental samples (Fig. 1). As public output, the system provides interactive identification keys and web catalogs of traits and taxa. Ecotaxonomy is implemented on GCore platform, that is being developed by Complex Cloud Solutions (<http://ccs.msk.ru/en/>). The GCore is based on Node.js, allowing for fast and efficient standardised programming. Thus, custom modules can be implemented in the future by external

developers in the framework of the platform. Ecotaxonomy is now open for beta-testing. After a public release (presumably in 2020), our goal is to keep the system and the code open and ensure data interoperability via Darwin core standards. The initial stage of Ecotaxonomy development (2016-2023) is funded in the framework of a DFG-funded project (SFB 990). To ensure long-term sustainability, we are involving ecological laboratories around the world and ultimately seek to establish a permanent funding by governmental or non-governmental organisations. Using and developing Ecotaxonomy, and linking it to existing open repositories will greatly improve the efficiency and integration of research in trait-based ecology.

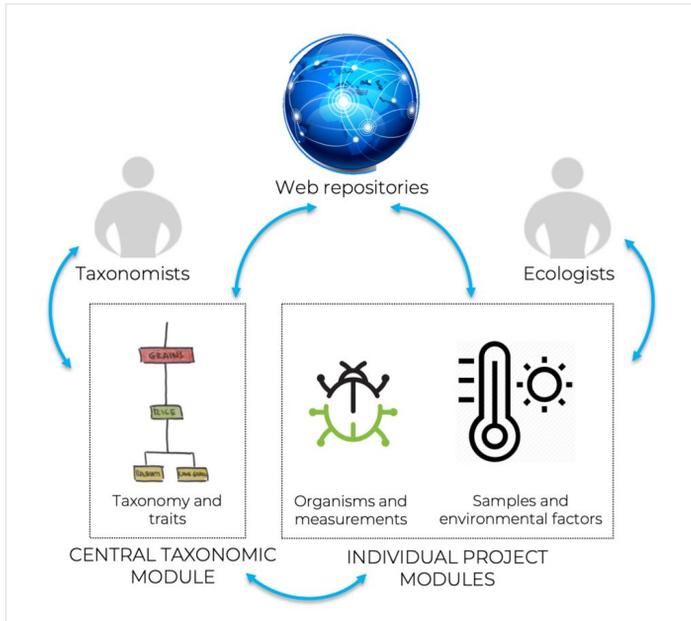


Figure 1.

The general structure of Ecotaxonomy. The taxonomic module is based on gbif.org, and further attached with traits by experts. Many research projects can be linked to taxonomy with bidirectional information flow.

Keywords

traits, identification key, morphospecies, research management, arthropoda, custom parameters

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